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NOTES AND LITERATURE.

GENERAL BIOLOGY.

Baldwin's "Fragments."¹ — The Fragments are twenty-four philosophical and psychological papers which appeared originally in *The Psychological Review*, *The Presbyterian Review*, *The New York Independent*, and other magazines. The author accounts for their republication in book form by the fact that they relate to larger topics on which he has published, or intends to publish, more extensively in separate works.

For those who have not read these essays as they first appeared it may be said that the author's point of view is idealism, but an idealism whose chief aim is to interpret and to harmonize the empirical sciences. "Philosophy is a new reading of science" (p. viii). This idealism, moreover, finds the universe of science to be "a cosmos which is not only true but also beautiful, and in some sense good," and "it is true and good *because it is beautiful*"² (p. ix). In fact "the æsthetic principle . . . represents the point in our conceptions where worth and truth coalesce and become one." Thus truth, it would seem, gets worth only when it is beautiful.

This proposition gives the secret of the whole book. The ascetic mind which desires only truth from science or philosophy, that is, the person whose sole aim is to eliminate contradiction from his view of the world, to make it strictly logically consistent, will get very little from the *Fragments*. Professor Baldwin does not specially aim at simplicity or precise definition, and often lets a metaphor bridge a gap in the argument; as thus — " . . . no philosophy is true which leaves out of its reckoning any degree on the arc which measures the mutual relation between personality and nature " (p. 9).

From the same æsthetic ease of attitude springs the most serious defect of the philosophical essays, — the error of supposing that the psychological explanation of an idea solves epistemological problems connected with the meaning of that idea. A renowned example of this is, of course, Hume's explanation of causality, as the case in

¹ Baldwin, J. M. *Fragments in Philosophy and Science*. New York, Scribner's Sons, 1902. 8vo. pp. xii, 389.

² The italics are Prof. Baldwin's.

which one thing seems to cause another because the idea of the first readily calls up in the mind the idea of the second.¹ The same error is often made in these essays. Thus in discussing *The Cosmic and the Moral*, Professor Baldwin says. "The sense of ought, then, from my point of view, is the anticipation of more experience, not yet treated under the rubrics of description"; (p. 73). "... I think the matter described by 'is' is the inadequate content of that which we feel 'ought' to be; and the description of what 'oughted' to be, *i. e.*, that which *was* the object of description of a part 'ought,' is what 'is.' In short, the 'ought' is a function of a mental content, of a descriptive 'is,'—a motor function, I think." If such a solution really touched the moral problem, it would follow that what one expects to do is what one ought to do; and any man's virtue would be his shrewdness at prognostication. That Professor Baldwin really means this psychologically which he thus substitutes for ethics, is clearly shown by the phrase "motor function."

Similarly the author writes: "... we rationalize nature" (p. 141), and again: "Now what we mean by 'reality' is just a group of experiences normally organized in a certain way; and we believe in realities when we recognize this tendency of our experiences to fall into certain characteristic forms of organization. We do the organizing, and so assert the reality as being there to be organized" (p. 341). Such a view is just now often expressed both in this country and England, but when analyzed it smacks of Hume's error, and is in fact the same, above-mentioned psycho-epistemological fallacy. That (psychological) process by which our ideas become organized is substituted as a solution for the epistemological problem of the organization and significance of reality. It is strange that such a view can be so widely entertained at precisely the moment when all scientists are confining themselves in laboratories patiently experimenting, well aware that they themselves neither know nor do anything except to await the oracle.

Professor Baldwin's essays in psychology which are reprinted in the *Fragments* are not intended (with the exception of six short papers which are purely experimental) for the professional psychologist. In method they are like the philosophical essays, and like them necessarily sacrifice technical precision to the purposes of popular exposition. Thus concerning the logarithmic law of Lechner, one reads,— "This affords a groundwork . . . which, in so far as the

¹ Of course Hume made here a second error as well, a circle, since the phrase "calls up" means itself nothing else than "causes."

experiments are reliable and the sources of error known, is not to be damaged by a hundred objections such as the *a priori* impossibility of the measurement of psychic magnitudes" (p. 154), and so forth. This will please the novice, but its flippancy will certainly mislead him. If psychic facts cannot be measured, then they have not been measured, and their measure is not given by the psycho-physic formula. It therefore behooves the serious scientist to enquire either what it is whose magnitudes the law does express, or else, what error there was in the "*a priori*" reasoning which declared all measurement of the psychic to be impossible. The flat contradiction must not exist; above all it should not be exhibited for the delight and mystification of the readers of *The Presbyterian Review*.

Among the experimental papers the best is the well-known one on Types of Reaction, reprinted from *The Psychological Review*. Here Professor Baldwin and Mr. W. J. Shaw offer a different interpretation of sensory and motor reaction times from that suggested by Lange, the originator of those terms. Lange (and Wundt) believed that the motor reaction time is shorter because for it the nervous paths are subexcited beforehand and so prepared for swift discharge. Whereas Professor Baldwin and Mr. Shaw prove that the motor reaction time is in many persons not shorter, but longer than the sensory, and that this latter is itself very variable, according as one or another sense receives the stimulus. Thus the distinction is not between motor and sensory but between the various sensory, reaction times (visual, acoustic, olfactory, *et cetera*). The shortest reaction time is given by that sense, which furnishes the images most used in the person's thought, and which therefore gives habitually the cues for motor discharges. Thus with a visualizer, visual stimuli will give the most rapid reaction time; with an auditeur, auditory stimuli. The so-called motor reaction is one given by a moteur, whose movements are habitually initiated by motor images: to whatever sense the stimulus is given, the impulse has to go to the motor-image-centres, and then to the muscles. Thus its course is indirect, but since in a moteur it cannot be shortened (that is, all his reactions are really motor), the increased speed of discharge due to the subexcitation of the motor-image-centres in the reactions which are avowedly motor will give these the advantage in time over the reactions which are (erroneously) assumed to be sensory, that is, in which the motor centers are not subexcited beforehand. Lange found the motor type of reaction to be swifter, because presumably these authors say, he had mostly moteurs to experiment on (the commoner type) and because he

called ambiguous all results which gave a shorter sensory reaction time. Professor Baldwin also very interestingly shows, in another essay, that his theory fits in well with the facts of sensory and motor aphasias.

The other experimental papers are of no great importance. The *Fragments* close with five short papers on miscellaneous subjects. The volume is admirably printed and bound, but on the whole the essays themselves are of such slight permanent value as hardly to justify a second publication in this form.

Theoretical Biology. — Professor Reinke of Kiel has written¹ an introduction to theoretical biology which treats of the fundamental biological problems in their metaphysical aspects. The work is thus predominantly philosophical in its purpose and form. He discusses vitalism and materialism, "Naturphilosophie," teleology, and adaptation, its content, origin and inheritance. The concepts of matter, energy, force, law, and form in their relation to organization as seen in the living world are discussed at length. The author introduces the idea of dominants or "unbewusst intelligenten Kräfte" as supplementary to the energy which operates by chemical processes the highly differentiated mechanism of the living organism. Dominants are not identical, in the author's view, with the old vital force, but like the mechanism have their basis in the structure of the organism. The biological sections of the work all of which are correlated with the fundamental problems discussed elsewhere deal with the attributes and functions of protoplasm and the cell and with the development and differentiation of organisms. Incidentally the problems of sexuality, fertilization and heredity are touched upon. In closing, the author calls attention to the similarity of his views and those of Johannes Müller. The illustrative matter is drawn largely from botanical sources. The scope of the work and the clearness with which it is written make the book of general interest and value.

¹ Reinke, J. *Einleitung in die theoretische Biologie*. Pp. xv, 637. Mit. 83 Abb. in Text. Berlin, Gebrüder Pötel. 1901. M. 18. —